

**FEDERAL HIGHWAY ADMINISTRATION**  
**FY-99 5-YEAR IT PLAN**  
**EXECUTIVE SUMMARY. EXECUTIVE SUMMARY.**  
**EXECUTIVE SUMMARY**

FHWA information technology initiatives are directed towards meeting the goals, objectives and corporate management strategies outlined in the FHWA National Strategic Plan and annual Performance Plan, as well as the DOT Strategic Plan. These initiatives support the agency's core business areas and three major programs: the Federal-aid Highway Program providing federal assistance to States to construct and improve the National Highway System, urban and rural roads, and bridges; the Motor Carrier Safety Program to develop regulations and enforce Federal requirements for the safety of trucks and buses to reduce commercial vehicle crashes; and the Federal Lands Highway Program to provide access to and within national parks, Indian reservations, and other public lands. The initiatives support research and technology applications in intelligent transportation systems and other priority areas, improvements in electronic data sharing and information dissemination to customers, enhancements to major information systems, and continuous improvement of the agency's information technology architecture.

**Accomplishments in FY 1998**

**Strategic Direction for IT Architecture**

FHWA made a once-in-a-decade decision on a strategic architecture for agency information systems. The new architecture is: web-enabled applications, using a microprocessor-based database server platform running on *NT*, a web-based report writer, and Internet Protocol (IP) data communications. This is a complete change from the former architecture (*IDMS* database, running on the TCC mainframe, with SNA data communications). This new architecture will provide more user-friendly systems, easier access to information, and easy-to-use tools to analyze data and develop ad hoc reports. The new IT architecture will eventually save a significant part of \$10 million that FHWA now pays for mainframe services at TCC and will minimize support requirements because each PC will only need a standard web browser, instead of having to load, maintain, and support special client software for each system on 3,500 PCs.

Work began on rewriting two key support systems (the Fiscal Management Information System and Voucher for Payment [PR-20] system) in the new IT architecture and the agency is working with its customers to identify requirements for moving the National Bridge Inventory and the Motor Carrier Management Information System. Work is also underway to employ the new IT architecture in such areas as the Restructuring Employee Survey used in October and the Performance Measurements Information System, which will go live for testing by data providers on December 18. This effort has included: identifying and evaluating different software packages, testing the software, analyzing licensing options, and arranging training for our system developers.

**Year 2000 Readiness**

FHWA is in very good shape on the Year 2000 (Y2K) computer problem. The agency's early efforts (begun as early as 1989) to prepare information systems for the century change have been recognized by Congress. All deadlines and reporting dates for Y2K compliance of information systems have been met.

The agency has taken a proactive role in coordinating efforts to prepare Intelligent Transportation Systems for Y2K compliance through such outreach activities as working with the Office of the Secretary to plan and implement the July 1998 ITS Y2K Summit, and establishing a Y2K web site with information on best practices and linkages to other Federal and State Year 2000 program web resources.

### **IT Infrastructure Upgrades**

During FY 1998, FHWA continued a major upgrade to its IT infrastructure effort, including:

- Replacement of the routers that connect the Local Area Network (LAN) in each FHWA field office with the nationwide FHWA Wide Area Network (WAN). The new routers have significantly improved reliability and capacity of our WAN connections.
- Began establishing internet protocol (IP) connections to State DOTs for new Web-enabled applications.
- Pilot testing of new network operating system software (IntraNetware 4.11) and upgraded e-mail system (GroupWise 5.2/5.5).
- Installation of NT-based PCs and upgraded file servers.
- Expansion of video conferencing to the remaining unserved field offices.

### **Web Site Enhancements**

FHWA designed and created a variety of enhancements to its web site resources to assist FHWA staff, customers, and partners:

- Enhancements to the FHWA main home page including a new information resource for TEA-21 (Transportation Equity Act for the 21<sup>st</sup> Century).
- Enhancements to the agency's intranet [StaffNet] including redesign of the home pages and human resources area to improve navigability, creation of a "Services Directory" to assist staff in identifying points of contact, a new area for Videoconferencing, and an online Feedback/Survey form in support of the agency's Quality Action Plan.
- Implementation of a web accessible electronic library for Intelligent Transportation System documents.

### **Key IT Goals**

*GOAL: Improve mission performance, data sharing, system integrity, communications, and productivity through deployment of information systems which are secure, reliable, compatible, and cost effective now and beyond the Year 2000.*

*GOAL: Improve the delivery and adoption of new technology for the nation's transportation infrastructure and operations through employment of supportive information technology.*

### **Critical IT Investments**

Critical IT investments for FY 1999 and beyond include:

- Continued development and prototyping of key information systems in the new FHWA IT architecture, including the Fiscal Management Information System, the Motor Carrier Safety Management Information System, and the Highway Performance Monitoring System.
- Completion of the next phase of upgrading FHWA data communications and PC networks to ensure a reliable, cost effective information technology infrastructure in support of current and future program missions and operations and communications with partners and customers.
- Provide continuing information technology support to on-going transportation research and technology deployment initiatives in pavement, structures, traffic safety, and intelligent transportation systems.

## **FY-99 5-YEAR IT PLAN**

**INITIATIVE ID:** FHWA0002

**OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HIA-10

**TITLE OF PROGRAM/PROJECT:**  
MOTOR CARRIER INFORMATION SYSTEM

**TOTAL LIFE CYCLE COST (IN \$000):** \$41,332

### **DESCRIPTION:**

The FHWA Office of Motor Carriers (OMC), due to its nationwide responsibilities for regulation and enforcement of the safety of about 450,000 interstate motor carriers, has extensive, mission-critical information system requirements. FHWA's Motor Carrier Management Information System (MCMIS) is a national census of interstate carriers containing extensive safety-related data on each carrier, including safety fitness rating, roadside inspection, accident, compliance review, and enforcement information. These data are accessible by 73 FHWA field offices and 55 MCSAP State offices, D.C., and territories, as well as the Department of Defense, and the industry and the public.

SAFETYNET is the distributed component of the information system, operating in State and federal field offices both as local management information systems and to communicate data, such as inspections, accidents, and safety reviews, electronically to and from MCMIS.

The new SAFER (safety and fitness electronic records) system provides motor carrier safety records instantly and electronically to roadside clearance sites under the Intelligent Transportation System/Commercial Vehicle Operations program (ITS/CVO). The national federal/state cooperative motor carrier safety program, the ITS/CVO program and the PRISM program are vitally dependent on the operation of these key systems. MCMIS also provides for the efficient use of federal and state staff through the targeting of unsafe carriers both for compliance reviews and for roadside inspections.

This initiative supports the FHWA strategic Safety and Productivity goals:

- Continually improving highway safety.
- Continuously improve the economic efficiency of the Nation's transportation system to enhance America's position in the global economy.

### **JUSTIFICATION - PERFORMANCE AND SAVINGS:**

MCMIS development, operations, and maintenance is essential in meeting OMC's strategic goal of reducing crashes. The data are used by OMC and State motor carrier safety enforcement managers in targeting carriers for compliance reviews and roadside inspections. Savings can be measured as a reduction in bodily harm and property damage as well as better use of resources for targeting.

**CONTACT PERSON AND PHONE NUMBER:** Angeli Sebastian, (202) 366-0071

### **CONTRACT STRATEGY:**

OMC uses various competitive-type contracts to perform system development, maintenance, and operations, as well as data entry. In addition, a large part of the funds are used to pay for

mainframe computer usage at the TCC.

**INITIATIVE ID:** FHWA0003

**OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HFL-20

**TITLE OF PROGRAM/PROJECT:**  
FEDERAL LANDS HIGHWAY ENGINEERING

**TOTAL LIFE CYCLE COST (IN \$000):** \$7,100

**DESCRIPTION:**

The Federal Lands Highway engineering program provides technical assistance to government agencies (federal, state, local) in planning and location studies, engineering studies, design, contract administration construction, emergency repair and maintenance of transportation facilities which serve Federal lands. The FHWA continues to enhance the information technology capabilities of its field Federal Lands Highway (FLH) divisions by updating its automated engineering systems (CADD), program management applications, and office automation infrastructure. The initiative supports the agency's strategic mobility goal to:

- Continually improve the public's access to activities, goods, and services through preservation, improvement and expansion of the highway transportation system and enhancement of its operations, efficiency, and intermodal connections.

Information technology support of the Federal Lands program relies on the strategy of improving productivity through the use of state-of-the-art engineering data management.

**JUSTIFICATION - PERFORMANCE AND SAVINGS:**

**CONTACT PERSON AND PHONE NUMBER:** Carl Triplett (202) 366-4257

**CONTRACT STRATEGY:**

**INITIATIVE ID:** FHWA0005

**OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HRD-10

**TITLE OF PROGRAM/PROJECT:**  
RESEARCH AND TECHNOLOGY SUPPORT - FORMER - HIGHWAY RESEARCH AND DEVELOPMENT

**TOTAL LIFE CYCLE COST (IN \$000):** \$20,274

**DESCRIPTION:**

This initiative includes information technology support of R&D projects for safety, structures, pavement, intelligent transportation systems, environment and other program areas that will improve research data collection and analysis techniques and result in better allocation of resources, and the safer, more efficient and effective use of the nation's highways. It encompasses on- and off-site contractor I.T. support of Turner Fairbank Highway Research Center operations, maintenance of systems such as the pavement research database under the Long Term Pavement Program, and I.T. services and equipment associated with development of R&D projects.

This initiative is included in the FHWA budget and supports the following strategic safety, mobility and productivity goals:

- Continually improve highway safety.
- Continually improve the public's access to activities, goods, and services through preservation,

improvement and expansion of the highway transportation system and enhancement of its operations, efficiency, and intermodal connections.

- Continuously improve the economic efficiency of the Nation's transportation system to enhance America's position in the global economy.

**JUSTIFICATION - PERFORMANCE AND SAVINGS:**

**CONTACT PERSON AND PHONE NUMBER:** ROBERT ELLINGTON (703) 285-2037

**CONTRACT STRATEGY:**

**INITIATIVE ID:** FHWA0007

**OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HVH-1

**TITLE OF PROGRAM/PROJECT:**

SUPPORT OF INTELLIGENT TRANSPORTATION SYSTEM PROGRAM MANAGEMENT

**TOTAL LIFE CYCLE COST (IN \$000):** \$3,129

**DESCRIPTION:**

The ISTEA legislation of 1991 launched a program of research and testing of intelligent transportation systems with a charge to investigate their effectiveness in solving congestion and safety problems, operating inefficiencies in transit and commercial vehicles and reducing the environmental impact of growing travel demand. By late 1995, early results of that research were shown to be cost-effective, and if implemented in an integrated system, could form a powerful platform for management of transit and traffic systems now and support a series of in vehicle private , products coming on line in a second generation of ITS. Thus, in January of 1996, U.S. DOT Secretary Pena set a national goal to build within a decade an intelligent transportation infrastructure (ITI) that would support rural and metropolitan travel management and safety needs as well as streamline the regulatory transactions associated with commercial vehicle operations within states and across our international borders.

Support activities associated with the research and development and architecture/standards areas of ITS are covered in FHWA0005. This initiative is concerned with IT hardware, software and support services for its program management and showcasing/outreach activities.

This initiative supports the FHWA corporate management strategy of "...providing employees with the capability to effectively acquire, process, store and retrieve information and to communicate, share, and process information with each other and with customers and partners."

**JUSTIFICATION - PERFORMANCE AND SAVINGS:**

**CONTACT PERSON AND PHONE NUMBER:** H.A. (WHITEY) METHENY (202) 366-2835

**CONTRACT STRATEGY:**

**INITIATIVE ID:** FHWA0008

**OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HMS-40

**TITLE OF PROGRAM/PROJECT:**

FEDERAL AID PROGRAM MANAGEMENT SUPPORT

**TOTAL LIFE CYCLE COST (IN \$000):** \$45,948

**DESCRIPTION:**

The FHWA has a number of automated systems that provide nationwide support of the Federal-aid highway program. These automated systems provide management information and operational support in the areas of Federal-aid fiscal management, electronic payments to States, and the bridge replacement program. Support includes systems analysis, design, development and maintenance services of both mainframe and microcomputer-based systems. These systems support both FHWA and its State DOT partners. The initiative supports the FHWA National Strategic Plan Productivity goal through the strategy of Federal-aid Efficiency: To maximize the rate of return resulting from Federal transportation investment, it is essential that the costs associated with delivering and accepting Federal-Aid be minimized. FHWA will continue its efforts at regulatory reform and will develop streamlined methods and mechanisms for delivering Federal assistance while maintaining all necessary safeguards of Federal law.

The improvements planned under this initiative also support the FHWA corporate management strategy of improving and re-engineering current information systems as necessary to keep pace with the state of the practice, and providing support for streamlining business processes.

**JUSTIFICATION - PERFORMANCE AND SAVINGS:**

Over the last year, FHWA has made a major strategic shift from the hardware, software, and data communications platform used for the past 12-15 years. Existing agencywide information systems have been developed and are being operated on the TASC mainframe using the IDMS database management software and standard SNA mainframe data communications protocols. Problems with this outdated platform include very high costs for TASC mainframe usage (currently \$10 million per year), non-relational database software from a vendor who has not proved to be a good long-term technology partner, and limiting data communications protocols that do not offer easy-to-use Internet-style (Web-based) access to agencywide information systems.

After extensive research and market analysis, FHWA selected a new platform for developing new agencywide systems and rewriting existing systems, both of which are now underway. The new platform includes the Oracle relational database management software and system development tools (for more economical system development), running on an applications server (a very powerful PC using the Windows NT operating system), and using Internet Protocol (IP) Web-based data communications. As information systems are implemented on this new platform, FHWA will realize substantial savings in mainframe costs and will provide users with easier Web-based access to information and better analysis and reporting tools to use that information.

To realize the benefits of this new platform, \$500,000 in additional contractor support services (4 staff-years of effort) are needed to provide (1) capacity planning, management, and oversight; (2) back-up, disaster recovery planning and testing, Internet fire-wall, and access security; and (3) hardware, software, and data communications operating services. (NOTE: these costs are spread among initiatives FHWA0002, --008, --009, and 010.) After a 4-5 year transition period, these additional costs will be more than off-set by very significant savings in charge-backs to FHWA for mainframe use.

**CONTACT PERSON AND PHONE NUMBER:** LAWRENCE I. NEFF (202) 366-9011

**CONTRACT STRATEGY:**

**INITIATIVE ID:** FHWA0009

**OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HMS-40

**TITLE OF PROGRAM/PROJECT:**  
CORE ADMINISTRATIVE SYSTEMS SUPPORT

**TOTAL LIFE CYCLE COST (IN \$000):** \$9,487

**DESCRIPTION:**

This initiative encompasses information systems and applications which streamline and improve delivery of human resources services to FHWA staff, and systems for managing this initiative encompasses information systems and applications which streamline and improve delivery of human resources services to FHWA staff, and systems for managing agency acquisitions and providing legal support. Among the short and long range strategies are the following:

- Provide access to the consolidated personnel information system for the recently established eastern and western human resource centers to permit direct input and retrieval of personnel actions.

Long term, human resource management will be addressed by the human resources information system initiative spearheaded in DOT by the coast guard.

- Enhance access to and management of agency training through enhancements to the FHWA training management system.

- Improve access to employee benefits information, such as insurance benefit information, retirement annuity estimates, and thrift savings plan information. FHWA plans to use Employee Express, a government-wide service, for the dial-in access and the agency's intranet to permit easy access via users' web browser software.

This initiative supports the FHWA corporate management strategy of "...providing employees with the capability to effectively acquire, process, store and retrieve information and to communicate, share, and process information with each other and with customers and partners."

**JUSTIFICATION - PERFORMANCE AND SAVINGS:**

**CONTACT PERSON AND PHONE NUMBER:** LAWRENCE I. NEFF (202) 366-9011

**CONTRACT STRATEGY:**

**INITIATIVE ID:** FHWAO010 **OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HMS-40

**TITLE OF PROGRAM/PROJECT:**  
HIGHWAY POLICY DEVELOPMENT AND PLANNING SUPPORT

**TOTAL LIFE CYCLE COST (IN \$000):** \$20,089

**DESCRIPTION:**

This initiative supports FHWA policy analysis and development, strategic planning, and technology development in three broad areas: (1) efficient and timely collection, management and dissemination concerning highway transportation and its intermodal connections, (2) highway financing, investment analysis and performance measurement, and (3) enhancing highway program contributions to economic productivity, efficiency, and other national goals. The support is carried out through projects to meet increasing needs for highway performance data and geographic data analysis, micro-based analysis and reporting systems, Highway Statistics Data Management and Access System, the Census Transportation Planning Package (CTPP), analysis of the results of the 1995 Nationwide Personal Transportation Survey (NPTS), and Motor Vehicle and Driver License Data System.



The initiative is in direct support of the agency's mobility, safety, productivity and environmental goals helping us to meet the public's need for improved access and for safe, comfortable, convenient, and economical movement of people and goods, and to be an environmentally conscious organization that practices active leadership in working with our partners to protect and enhance the natural and human environment.

**JUSTIFICATION - PERFORMANCE AND SAVINGS:**

Migration from a main frame environment to a microprocessor-based database server will result in a lower cost, high access, environment which will improve service to Federal, State and local information user community.

**CONTACT PERSON AND PHONE NUMBER:** Kimberly Wilkins (202) 366-9204

**CONTRACT STRATEGY:**

**INITIATIVE ID:** FHWA0011 **OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HMS-40

**TITLE OF PROGRAM/PROJECT:**  
STRATEGIC IRM INITIATIVES

**TOTAL LIFE CYCLE COST (IN \$000):** \$25,062

**DESCRIPTION:**

This initiative includes investments in information technology which result in more effective and e-mail efficient support of agency mission operations. Included are:

- Upgrade of FHWA's information technology infrastructure-- most of FHWA's 3,600 personal computers will be 4 years old in 1998, and most LAN file servers are the same age or older. Given the anticipated life cycle of this equipment and all FHWA offices' critical dependence on reliable information technology to accomplish their program missions and daily operations, a coordinated, 3-year replacement program began this year for PCs and LAN file servers, as well as routers and hubs to upgrade FHWA's wide and local area networks.
- Replacement and consolidation of FHWA headquarters correspondence tracking systems into a single system for managing incoming and outgoing correspondence.

This initiative supports the FHWA corporate management strategy relating to information and analysis of "...improving or re-engineering current information systems as necessary to keep pace with state of the practice."

**JUSTIFICATION - PERFORMANCE AND SAVINGS:**

**CONTACT PERSON AND PHONE NUMBER:** LAWRENCE I. NEFF (202) 366-9011

**CONTRACT STRATEGY:**

**INITIATIVE ID:** FHWA0012 **OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HMS-40

**TITLE OF PROGRAM/PROJECT:**  
TELECOMMUNICATIONS WITH STATE DOTs AND INTERNAL STAFF

**TOTAL LIFE CYCLE COST (IN \$000):** \$26,557

**DESCRIPTION:**

This initiative covers the range of data, e-mail, video, internet, and network communications in support of program and administrative operations within FHWA and with State DOT partners and other external customers. Included are the following:

- Continued operations of the FHWA wide area network, which uses dedicated data lines from GSA's FTS2000 contract, as mandated by congress. These services enable FHWA field staff to access and use our nationwide information systems and provide nationwide data links among all FHWA offices for office automation and electronic mail.
  - Connectivity between FHWA's nationwide information systems and the State DOTs for electronic data sharing and electronic signatures, e.g., for direct electronic transmission of program and financial data and requests for Federal-aid reimbursement, Federal-aid project authorizations and agreements, and to provide access to each other's local project and program management databases and e-mail.
  - Operation of FHWA's video-conference system.
- FHWA's share of the intermodal data network (IDN) for e-mail links to other dot modal administrations' e-mail systems.

This initiative supports the FHWA corporate management strategy relating to information and analysis of "...providing employees with the capability to effectively acquire, process, store and retrieve information and to communicate, share, and process information with each other and with customers and partners, and improving or re-engineering current information systems as necessary to keep pace with state of the practice.

**JUSTIFICATION - PERFORMANCE AND SAVINGS:**

Cost saving in avoided travel costs through use of video conferencing are estimated at \$28,000 per office per year. When video conferencing is used by all offices, estimated agencywide savings in travel costs will total nearly \$2 million per year.

**CONTACT PERSON AND PHONE NUMBER:** LAWRENCE I. NEFF (202) 366-9011

**CONTRACT STRATEGY:**

**INITIATIVE ID:** FHWAO013                      **OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HMS-40

**TITLE OF PROGRAM/PROJECT:**

INFORMATION RESOURCES AND END USER SUPPORT

**TOTAL LIFE CYCLE COST (IN \$000):** \$29,063

**DESCRIPTION:**

This initiative includes contract support for ongoing operation, maintenance and upgrading of FHWA's network infrastructure, ongoing operation of the FHWA help desk, field office LAN and WAN support and development of local computer applications. This contract also provides ongoing technical support for the electronic recordkeeping systems already installed. Also included are:

- Agencywide contract site licenses for continued use of FHWA's standard local area network operating system and our office automation software (word processing, e-mail, spreadsheets, etc.). All software will be upgraded as part of the planned agencywide it infrastructure upgrade. Annual agencywide site licenses are the most economical way to use commercial software and provide all grades issued by the company, as well as call-in telephone support.

- Ongoing use of other contract IRM services, such as access to the congressional quarterly, WESTLAW, LEXIS, and DATAPRO as needed by selected FHWA staff.
- Equipment maintenance services and emergency replacement for FHWA's installed base of PCs, LAN file servers, and data communications hardware. Maintenance is acquired on an on-call, time and materials basis. Emergency replacement is sometimes required where it is no longer cost effective to repair equipment.
- IRM-related supplies.

This initiative supports the FHWA corporate management strategy of "...providing employees with the capability to effectively acquire, process, store and retrieve information and to communicate, share, and process information with each other and with customers and partners."

**JUSTIFICATION - PERFORMANCE AND SAVINGS:**

**CONTACT PERSON AND PHONE NUMBER:** LAWRENCE I. NEFF (202) 366-9011

**CONTRACT STRATEGY:**

**INITIATIVE ID:** FHWA0014

**OA:** FHWA

**ORGANIZATION/ENTITY (OA OFFICE SYMBOL - PHONE BOOK CODE):** HTA-10

**TITLE OF PROGRAM/PROJECT:**

TECHNOLOGY PROGRAM IMPROVEMENT INITIATIVES

**TOTAL LIFE CYCLE COST (IN \$000):** \$9,030

**DESCRIPTION:**

This program includes Office of Technology Application's National Technology Deployment Initiatives in pavements, structures, traffic, safety, intelligent transportation systems and other program areas such as technology transfer, local and tribal technical assistance, that will improve the delivery and adoption of new technology for the nation's transportation infrastructure and operations. It will allow a better allocation of resources, enhanced productivity, and improved systems for a safer, more efficient, and effective use of the nation's National Highway System. This program is included in the FHWA budget and supports FHWA mobility, safety, and productivity strategic goals:

- Continually improve the public's access to activities, goods, and services through preservation, improvement and expansion of the highway transportation system and enhancement of its operations, efficiency, and intermodal connections.
- Continuously improve highway safety.
- Continuously improve the economic efficiency of the Nation's transportation system to enhance America's position in the global economy.

**JUSTIFICATION - PERFORMANCE AND SAVINGS:**

**CONTACT PERSON AND PHONE NUMBER:** Robert Kelly (202) 366-1565

**CONTRACT STRATEGY:**